

IDAHO NATIONAL ENGINEERING AND  
ENVIRONMENTAL LABORATORY

INTEGRATED SAFETY MANAGEMENT SYSTEM  
PHASE II, PART II VERIFICATION

FINAL REPORT  
Volume I



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U.S. Department of Energy  
Washington, D.C.

I, by signature here, acknowledge that I concur with the TEAM LEADER in the findings and conclusions of this report in my assigned area.

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## **EXECUTIVE SUMMARY**

The Department of Energy (DOE) is committed to accomplishing its mission safely. To this end, contractors must integrate safety into management and work practices at all levels so that programs, processes, and objectives are achieved while protecting the public, the worker, and the environment. The contractor is required to implement an integrated safety management system in order to achieve the objective of doing work safely. To ensure these objectives are met, the Department issued a Safety Management System Policy 450.4 (P 450.4), and the DOE Acquisition Regulations (DEAR, 48 CFR 970.5204-2 and 970.5204-78).

This report documents the results of the review conducted to verify: (1) that the Idaho National Engineering and Environmental Laboratory (INEEL) Integrated Safety Management System (ISMS) Description (PDD-1004) has been implemented in the Specific Manufacturing Capability, Idaho Falls Facilities not covered previously, and RWMC operations objective; and (2) that the DOE Idaho Operations Office (DOE-ID) has implemented processes that integrate their safety activities and oversight with those of the INEEL ISMS. The general conduct of the review was consistent with the direction provided by the Under Secretary's Memorandum of March 1997, Protocol for Review and Approval of Documented Safety Management System Descriptions Associated with Defense Nuclear Facilities, and the Integrated Safety Management System Guide G 450.4-1.

This team was tasked with verifying that the approved ISMS Description had been implemented consistent with the P 450.4, DEAR 970.5204-2 and 970.5204-78, and the July 29, 1998 Contracting Officer's guidance and with providing a recommendation to the DOE-ID Manager concerning the ISMS implementation. Aspects of INEEL ISMS were previously reviewed as part of the 1998 accident investigation, the Phase I ISMS Verification, and the Independent Review of the Idaho Operations Office Preparations for Phase II Verification of its ISMS. Results documented in reports from those reviews provided valuable insight into the status of ISMS. Those reports were utilized by this Verification Team so that previously identified deficiencies were not simply repeated, but the current ISMS implementation was evaluated to determine if corrective actions from the previous reviews had been incorporated.

To conduct the review, the team was divided into three sub-teams organized around the Site Area/facilities within the scope of this review. The sub-teams were: Specific Manufacturing Capability (SMC), Idaho Falls Facilities (IFF) and Radioactive Waste Management Complex (RWMC) OPS. These teams conducted their reviews over a period of approximately three days on site. The reviews were conducted using Criteria and Review Approach Documents that were based on the core functions and guiding principles from the DOE policy and associated guide. Summaries of the reviews are contained in Appendix A with details in Volume II.

## **COMMENTS**

This review team noted the results of the continued strong management commitment to Integrated Safety Management System. This commitment was demonstrated by the improvements in previously noted weak areas. For example, the full integration of the environmental hazards into the hazard identification processes used in maintenance, operations

and research work was evident. Other areas of improvement include improved engineering support, electronic integration of environmental hazard databases, and lockout/tagout training. The Site Operations Director (SOD) and the Site Area Director (SAD) operational organization continues to display a strong line management commitment to maintaining a high standard of safe operations. This organization continues to be the backbone of ensuring the compliance with the safety requirements and disciplined operations.

During this review a Facility Excellence Program walkdown was observed in the Radioactive Waste Material Complex (RWMC) and the Team noted the exemplary material condition and the housekeeping in that complex. This inspection process is an excellent practice, provides continuous improvement in ISMS, and establishes unit pride in the success of their unit or facility.

Worker involvement in safety improvement efforts in programs such as VPP, WASP (a behavior-based program), and the Employee Safety Teams is enthusiastic, inquisitive and influences safety in a positive manner. This effort is in addition to the enthusiasm displayed with the worker involvement in the identification of hazards and the corresponding controls or mitigation actions required to control those hazards.

This review determined that the issues management system at Specific Manufacturing Capability (SMC) and Idaho Falls Facilities (IFF) was implemented effectively. Additionally, the SMC self-assessment program and the Corrective Action Review Board (CARB) were exceptionally well organized, comprehensive, and rigorously managed.

There were some areas identified that will need attention to improve the implemented ISM System. At SMC, the team noted that the installed interlocks on the equipment line that are utilized to ensure personnel safety are not under a surveillance (testing) program. Additionally, some procedures require bypassing of interlocks without formal analysis of the risk to workers.

The Senior Supervisory Watch program at both SMC and RWMC needs to be strengthened to obtain the maximum benefit for the resources utilized by these facilities. The areas of qualification and management expectations for that assignment would add benefit to the overall execution of the ISM System.

As the team observed actions, reviewed documents, and conducted interviews, it became clear that a disconnect exists between the site level evaluation and the facility level evaluation of the issues management and the lesson learned programs. The integration of the corporate and facility organization of these two programs needs improvement. Both organizations must understand the requirements of the other organization.

DOE-ID continues to demonstrate a strong commitment to ISMS. Line management responsibility for safety at IFF, SMC and RWMC is a significant strength. However the staffing at IFF needs to be increased to ensure sustained DOE-ID ISMS expectations.

An evaluation of the formalization of the EH-2 Corrective Action program revealed that the identified issues have been incorporated in a formal program with corrective actions that are

monitored for timely completion. This process includes closure verification and validation by DOE-ID. However, the program needs to be institutionalized. EH-2 needs to better define the requirements concerning which issues are to be entered in the program and who has the authority to decide which issue may be entered into the program. Until the input mechanism is better defined it will be difficult to expect that the system will be fully integrated into the INEEL processes and practices.

## **CONCLUSIONS**

The BBWI Management Team was found to be competent and aware of safety and safety integration issues. The policies, procedures, and practices observed during the ISMS Verification were found to be generally in agreement with requirements and effective in meeting goals.

BBWI (managers, supervisors, and workers) and DOE-ID demonstrated a strong commitment to safety and the concept of ISM. All levels of the organization were knowledgeable of the functions and principles of ISM. The documents reviewed, the personnel interviewed, and the activities observed during the ISMS verification confirmed that the principles and functions of ISM are integrated into work planning and work execution at the areas reviewed.

An extensive effort has been made in implementing the flowdown of standards and requirements of corporate progress to the facility level. It is important to note that this has required a significant amount of training and buy in of these systems and procedures at all levels throughout the organization. Therefore, it is necessary that these programs be allowed to mature through use and that emphasis should continue to be placed on improving the effectiveness of implementation without disruptive significant changes.

Process improvements being considered need to be thoroughly integrated with line management at the facility level and should be pursued in a controlled disciplined manner.

The team concludes that ISMS is implemented at SMC, IFF, and RWMC and that there is a management commitment to continue to strive for improvement (excellence) and thereby raise the standard for operational excellence.

## **NOTEWORTHY PRACTICES**

### **BBWI**

- Strong management commitment to ISMS is demonstrated by the improvement in previously identified weak areas. Integration of environmental hazards into the hazard identification processes is noted.
- SOD/SADs have displayed a strong line management commitment to maintaining a high standard of safe operations.
- Facility Excellence Program walkdowns are considered to be a noteworthy practice relative to providing continuous improvement for ISMS.
- Material condition and housekeeping at RWMC was exemplary.
- Issues management systems at SMC and IFF were found to be effectively implemented.
- SMC self-assessments and CARB are exceptionally well organized, comprehensive, and rigorously managed.
- Worker involvement in safety improvement efforts such as VPP, WASP and Employee Safety Teams is enthusiastic, inquisitive, and has a positive influence on safety.
- Providing pictures of normally inaccessible equipment to familiarize workers of hazards and operation of equipment for high risk jobs at SMC is a good practice.

### **DOE-ID**

- DOE-ID organization continues to demonstrate a strong commitment to ISMS. Line management responsibility for safety for IFF, SMC and RWMC is a significant strength.

## **OPPORTUNITIES FOR IMPROVEMENT**

### **BBWI**

- The Senior Supervisory Watch (SSW) Program needs strengthening relative to management expectations and facility specific qualification of personnel.
- Integration between facility and corporate organizations for issues management and lessons learned program needs improvement.
- SMC machinery interlocks should be routinely tested to ensure operability.
- A formal documented review process should be implemented for bypassing interlocks at SMC.
- Management needs to define and train personnel on expectations relative to valve positioning/operation.
- JSAs at IFF and SMC need more rigor to improve effectiveness and consistency.

### **DOE-ID**

- DOE-ID IFF staffing needs to be increased to ensure sustained DOE-ID ISMS expectations.
- DOE EH needs to identify the type of issues and who is responsible for inputting new issues into the CATS.
- DOE-ID and BBWI need to establish directives or procedures for processing future EH issues.



## **1.0 INTRODUCTION**

Department of Energy (DOE) Safety Management System Policy 450.4 (P 450.4), defines the expectations that DOE facilities will be operated in accordance with an Integrated Safety Management System (ISMS). The DOE Acquisition Regulations (DEAR, 48 CFR 970) further require that the Head Contracting Authority (Idaho Operations Office [ID]) provide guidance to the contractor as to the expectations for the ISMS Description.

Each site within DOE is to verify that the ISMS Description: 1) fulfills the expectations of the Head Contracting Authority, meets the requirements of the DEAR and the DOE Policy for Safety Management Systems; and 2) that the Description is implemented. The verification reviews are to be conducted in accordance with the protocol for the ISMS Verification process specified by Under Secretary of Energy Memorandum of March 1997, Protocol for Review and Approval of Documented Safety Management System Descriptions Associated with Defense Nuclear Facilities; and DOE G 450.4-1, Integrated Safety Management System Guide. As described in the Verification Protocol and the ISMS Guide, the ISMS Verification is to be conducted in two phases. The ISMS Verification Phase I verified the adequacy of the description and the ISMS Verification Phase II verifies implementation of the ISMS.

The ID Manager guidance and expectations for the Idaho National Engineering and Environmental Laboratory (INEEL) were provided to the previous Contractor for the establishment of an ISM System at INEEL.

The ISMS established by the previous Contractor was evaluated by an ISMS Verification Phase I (ISMSV-I) completed in the spring of 1999. An ISMSV Phase II for the first five selected INEEL Facilities was completed in September 1999, immediately prior to the change of INEEL Contractors. By DOE-ID direction, remaining INEEL facilities, which had not yet undergone an ISMSV-II, are to be evaluated this fiscal year. This guidance is included within the INEEL Contractor's current contract and DOE-ID directives and guidance.

The results, corrective actions, and lessons learned from the previous ISMSV-I and II were to be included and integrated into INEEL operations. This ISMSV-II Team has been formed to evaluate the implementation of INEEL ISMS at two additional facilities. The Team will utilize the results and lessons learned in the conduct of the previous ISMSV-I and II evaluations for the purpose of this evaluation.

The ID Manager appointed Roy Schepens from DOE-SR as the Team Leader for this ISMS Verification Phase II, Part II and specified the scope of this review and the desired deliverables.

### **1.1 Purpose**

The purpose for the INEEL ISMS Verification Phase II, Part II is to provide an assessment to the ID Manager concerning the effectiveness of the implementation of ISMS for facilities at INEEL, which have not yet undergone an ISMSV-II, and to delineate areas in which implementation does not conform to the approved ISMS Description. In assessing the adequacy of the ISMS implementation, the ISMS Verification Phase II will consider the results of previous reviews such as the ISMS Verification Phase I and Phase II. The final report of this ISMSV- Phase II, Part II will discuss the progress and effectiveness of the implementation efforts in these identified Site Area/facilities.

### **1.2 Scope**

The scope of the INEEL ISMS Verification Phase II will include the ISMS for the following INEEL Site Area/facilities and activities managed and operated by BBWI under Contract DE-AC07-99ID13727 including the integration with the ID: all facilities at the Specific Manufacturing Capability (SMC); Idaho Falls Facilities (IFF) not covered during the September 1999 Phase II review; and the Radioactive Waste Management Complex (RWMC), reverification of the Operations objective. Other INEEL Site Areas and facilities are excluded from the scope of this review. More specific information on the facilities which are within the scope of the review is included in Section 7.

The ISMS Verification Phase II will evaluate the adequacy of the ISMS implementation when compared to the approved ISMS Description. In assessing the adequacy of the ISMS implementation, the ISMS Verification Team will consider how the described site-wide corporate system containing safety requirements is coordinated and integrated “downward” into the individual facility and work processes. This review will also assess the integration of actions for the resolution of safety items identified by DOE-EH into the contractor and DOE implementation of their ISMS. At the facility or process level, the mechanisms, which identify, evaluate, control and assess individual work items will be assessed as key indicators of the adequacy of the implementation. The review will assess the adequacy of the programmatic documentation at the facility level. Integration between the Contractor and DOE-ID as well as the integration within the Contractor’s organization from the site-wide to the process specific implementation will also be reviewed. By reviewing supporting documents, interviewing individuals within the facilities, and observing the accomplishment of selected work processes, the ISMS Verification Phase II will be able to draw conclusions as to the adequacy of the ISMS implementation. It is important to note that the complete integration of environmental hazards including waste minimization and pollution prevention into the ISM system is important to the success of that system. The scope of the review at INEEL will include all eight ISMS Core Expectations (Appendix II) included in the ISMS Verification Team Leader’s Handbook, which will result in evaluation of the core functions and guiding principles for Integrated Safety Management as defined in the DOE P 450.4.

### **1.3 Overall Approach**

The ISMS Verification Phase II Team will review the ISMS implementation in the selected Site Area/facilities at INEEL. The Verification Team will evaluate the progress and effectiveness of the implementation efforts against the guiding principles and core functions defined in DOE P 450.4. Based on this assessment, the ISMS Verification Phase II Team will draw conclusions and make recommendations to the ID Manager as to whether the ISMS implementation is achieving the overall objective of Integrated Safety Management which is described as follows:

"The Department and contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment."

#### **1.3.1 Sequence of Activities**

The first step in the ISMS Verification process was to provide training and interaction among the team members to ensure an adequate understanding of the DOE ISMS Policy expectations, the specific INEEL ISMS Description, and the plan and strategy for the review. As a final action of this initial effort, the team will complete preparation of the Criteria and Review Approach Documents (CRADs) which will guide the review. The final CRADs are attached as Appendix II of this RP. The indoctrination period of about four days, including CRAD development and some initial briefings was conducted at the INEEL at two weeks prior to the start of the ISMS Verification Phase II. This initial period was utilized by DOE-ID and the Contractor to provide ISMS presentations and briefings to update the Verification Team on implementation progress since the previous ISMS verifications.

The ISMS Verification Phase II Part II review was conducted during a one-week period following development of the CRADs and completion of the team indoctrination. The review consisted of completing any necessary Site Area/facility specific briefings from the Contractor and DOE-ID to the team during the first three days, as well as interviews, observations, and document reviews. The final days of the week were used to complete the Assessment Forms, the preparation of the Final Report and any related activities.

Team members completed their evaluation of the criteria in the individual CRADs that support conclusions as to whether the individual objectives have been met. The evaluation of the criteria resulted from the presentations coupled with the interviews, observations, and documentation reviews. An important input to all efforts was the observations and discussions with individuals within the facilities who explain and defend their ISMS at their individual levels of responsibility. The record of the evaluation is the Assessment Form. An Assessment Form was prepared for each Objective in the CRADs and document the basis for the conclusions reached concerning the objective and criteria. Each Assessment Form concludes with a set of numbered issues or observations which will be rolled up to "Opportunities for Improvement" in the Executive Summary of the Final Report. Issues identified during the review of the individual

CRAD which warrant the attention of the ID Manager or senior Contractor management will be clearly identified within the Assessment Form. In addition, good ISMS practices and strengths will be identified as “Noteworthy Practices.”

Each CRAD is intended to guide the evaluation of the adequacy of the ISMS implementation. Detailed instructions for completing the Assessment Form will be provided to the ISMS Verification Phase II Team prior to and during the review.

### **1.3.2 BBWI and DOE-ID Preparations**

BBWI and ID Managers presented their implementation of ISMS, consistent with the approved Description document, to the team so that a basis for interviews, observations and further document reviews can be formed. The individual Managers understand the expectations of the ISMS Verification Phase II and have an understanding of the ID expectations for ISMS implementation. In order to enhance the validity of this premise, efforts will be undertaken by the ISMS Verification Phase II Team leadership to enhance the understanding of the Contractor’s Managers of the expectation of the ISMSV- II Team.

The briefings consisted of BBWI and ID making presentations to the team to describe how the approved ISMS Description has been implemented consistent with DOE P 450.4, the ISMS DEAR clauses, and the requirements of the ID Manager. The briefings included identification and a brief description of supporting program and process documents at the Site Area/facility level, as well as any self-identified gaps in the ISMS implementation plans. These presentations described the integration of safety management between the Contractor ID, and within the Contractor organization at the Site Area/facility level. At the conclusion of the presentations, the ISMS Verification Phase II Team reviewed documentation, interviewed selected personnel, observed work processes, and completed the other necessary actions to support the review.

### **1.3.3 Process for ISMS Review**

The review was conducted using the CRADs that are included as Appendix II of the RP. The CRADs are identified by functional area and they will be used by each of the two sub-teams to form a common basis for the review. The functional areas are Hazards Identification and Standards Selection (HAZ), Management (MG), Operations (OP), and DOE-ID (DOE). The ISMS Verification Phase II, Part II sub-teams are:

Specific Manufacturing Capability (SMC)  
Idaho Falls Facilities (IFF)

The ISMS Verification Phase II Team will review ISMS implementation at these additional sites as part of the phased approach for verifications for the remaining Site Area/facilities that have implemented the approved ISMS Description at INEEL. Additionally, corrective actions from the Radioactive Waste Management Complex ISMSV-II of September 1999 will be evaluated. Specifically, a reverification of the Operations CRAD will be conducted at the Radioactive Waste Management Complex Site Area.

The sub-teams assessed the integration of actions, obligations, and requirements for the resolution of safety items identified by DOE-EH into the contractor implementation of their ISMS. Similarly, the effective integration of these implementation requirements into the DOE-ID implementation was assessed.

The SMC sub-team reviewed the ISMS implementation for facilities within the Specific Manufacturing Capability.

The IFF sub-team will review the ISMS implementation for facilities within the Idaho Falls Facilities. Within the scope of the review at IFF, the sub-team will assess ISMS implementation at the Leased Labs, comprised of the North Holmes Laboratory (NHL), North Yellowstone Complex Laboratories (NYCL), May Street North Laboratory, May Street South Laboratory, and North Boulevard Complex Annex (NBCA). Additionally, the IFF review focused on the support services' implementation of ISM.

The MG CRADs included a review of the M&O contractor transition from LMITCO to Bechtel BWXT Idaho, LLC with particular emphasis on maintenance of ISMS methodologies previously reviewed and approved during the ISMS Verification Phase I.

The review of the individual CRADs assessed the status of the ISMS implementation and will support the Verification Phase II Team's conclusions and recommendations with regard to work being done safely and in accordance with the principles and functions of DOE P 450.4.

## **2.0 ASSESSMENT OF INEEL ISMS**

This section provides a summary of the ISMS Verification results for both DOE-ID and BBWI. This review focused on the facility and work process levels, with emphasis on noted deficiencies or recommendations relative to the five functions of ISMS described in P450.4. More detailed summaries for each sub-team are included in Appendix A. The safety management functions provide the essential framework for evaluating line management's performance in implementing an effective safety management program. These functions identify the requirements that apply to work processes, and ensure that the necessary analysis and controls have been implemented to ensure that work can be performed safely and in an environmentally sound manner.

A secondary task during this review was to evaluate the site mechanisms for consistency with previously reviewed processes to determine the continued emphasis on ISMS by BBWI management. As a result of this tasking, reviews of several site processes were conducted to make that determination.

Process reviews were conducted on various areas of weaknesses that have been identified during previous reviews. In all areas reviewed, clear substantial progress was demonstrated. Of particular note were the advances in the integration of environmental hazards into the Hazard Identification Process. During previous reviews the processes for identification of environmental hazards were conducted separately due to the development of improved environmental hazard identification processes. Those processes have now been improved and included in the key

processes (e.g., STD-101, MCP-3562, and MCP 3471). Additionally, the ability to search over 40 environmental data bases of environmental hazards electronically is well on the way to completion and is expected to be in place in July. Both improvements indicated the resolve of INEEL to improve the ISM process.

Other areas of improvement that were noted were the areas of the maintenance planning and work package preparation, engineering support that is being provided to the INEEL facilities, the formalization of a Conduct of Engineering protocol, and continued work in the improvement of the Configuration Management Program. Other noteworthy improvements were in Conduct of Operations and Lockout/Tagout training.

The Executive Council Meeting and the Senior Operations Review Board meetings were attended. As expected these meetings held a different tenor and focus from the meetings attended during previous reviews. Previously these meetings had strong ISMS implementation focus while the present meetings discussed management issues with a very small focus toward ISMS. During the meetings observed on this review, the strong focus was toward changing, establishing, and installing new functional area processes and systems to better achieve support functional area goals.

Appropriately, the goal of the contractor during previous reviews was to achieve control of the hazard identification and establishment of safety controls that would prevent further accidents or incidents. Work control systems were identified, implemented or changed with the single goal of establishing a safety management system that would prevent recurrence of the previous accident. This was accomplished despite the disruptions to other site systems. As the implementation of ISMS proceeds across the site, pressure will build to revise, change, and modify these functional area systems to better support the functional area goals. In view of the major efforts of the site to put the appropriate systems in place and to ensure the requirements of these functional areas are adequately implemented within the facilities, it is this team position that in the short term these system changes be limited to necessary high value return changes and those few changes be achieved in a non-disruptive manner.

The following noteworthy practices and opportunities for improvement were general in nature, and apply to the overall function and improvement of the ISMS.

#### Noteworthy Practices:

DOE-ID organization continues to demonstrate a strong commitment to ISMS. Line Management responsibility for safety for IFF, SMC, and RWMC is a significant strength,

BBWI's strong management commitment to ISMS is demonstrated by the improvement in previously identified weak areas. Integration of environmental hazards into the hazard identification process is noted.

Worker involvement in safety improvement efforts such as VPP, WASP, and Employee Safety Teams is enthusiastic, inquisitive, and has a positive influence on safety.

### Opportunities for Improvement:

DOE-ID IFF Staffing needs to be increased to ensure sustained DOE-ID ISMS expectations.

DOE-ID and BBWI need to establish directives or procedures for processing future EH issues.

DOE EH needs to identify the type of issues and who is responsible for inputting new issues into the CATS.

The Senior Supervisory Watch (SSW) program needs strengthening relative to management expectations and facility specific qualification of personnel.

The following noteworthy practices and opportunities for improvement apply to specific core functions and improvements within the ISMS.

### **Define the Scope of Work: Missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated.**

An effective process existed for identifying and prioritizing mission-related tasks, modifications, and work, in accordance with the mechanisms of the INEEL ISMS.

Active and continuous management attention on work identification, planning and prioritizing was clearly evident. This resulted in positive control of work scope and resource allocations during both routine operations and maintenance.

The scope of maintenance activities was well documented on work control forms and packages. The scope of operational activities was well documented in operating procedures.

### **Analyze the Hazards: Hazards associated with the work are identified, analyzed and categorized.**

The hazard analysis process at the facilities reviewed adequately controlled hazards to workers, the environment and the public. DOE expectations of requirements systematically flowed down into implementing processes and procedures.

The process utilized to ensure all required company requirements were included in the facility documentation was comprehensive and thorough.

There was adequate specification and implementation of controls for the identification, analysis and categorization of hazards for both maintenance and operational activities. Work packages were prepared in accordance with STD-101 and adequately addressed the identified hazards.

### Opportunities for Improvement:

A formal documented review process should be implemented for bypassing interlocks at SMC.

**Develop and Implement Hazard Controls: Applicable standards and requirements are identified and agreed-upon, controls to prevent/mitigate hazards are identified, the safety envelope is established, and controls are implemented.**

Adequate implementation and integration of hazard controls in work control processes was observed. Work planners were well qualified and have developed effective tools to ensure consistency in specifying mitigation controls for the identified hazards.

Results from the Hazard Identification and Mitigation (HIM) process were incorporated into the instructions of work orders. Multiple walkdowns are conducted for maintenance work to validate the hazards and conditions. Walkdowns are also conducted for the development of operational procedures.

Worker and crafts indicated that their participation during the job-planning process, walkdowns of work sites, and pre-job briefs has significantly enhanced work control.

Other mechanisms used to develop and implement hazard controls include the Operational Safety Board review, SME reviews, and post-job reviews.

**Opportunities for Improvement:**

SMC interlocks should be routinely tested to ensure operability.

JSAs at IFF and SMC need more rigor to improve effectiveness and consistency.

**Perform Work within Controls: Readiness is confirmed and work is performed safely.**

The workforce demonstrated a strong commitment at all levels to perform work safely. All facilities demonstrated effective process controls for confirmation of facility readiness and for authorization of work.

Hazard controls were reliably communicated to operators and craft personnel. “Stop Work” authority was continually re-emphasized to the workers by the Foremen. With a few specific exceptions, training of employees was adequate to support expected performance levels.

Adding to the assurance of employee safety was the positive attitude of the contractor management and staff, who appeared to be continually working to improve safety conditions.

**Noteworthy Practices:**

SOD/SADs have displayed a strong line management commitment to maintaining a high standard of safe operations.

Providing pictures of normally inaccessible equipment to familiarize workers of hazards and operation of equipment for high-risk jobs at SMC is a good practice.

Material condition and housekeeping at RWMC was exemplary.



#### Opportunities for Improvement:

Management needs to define and train personnel on expectations relative to valve positioning/operation.

**Provide Feedback and Continuous Improvement: Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur.**

Procedures and mechanisms were in place at the five facilities assessed to collect feedback information, including self-assessments, independent assessments, post-job reviews, performance measures and indicators, lessons learned, employee safety suggestions and concerns, and occurrence reports.

Issues, nonconformances, and deficiencies were generally included in the ICARE system, where site-wide tracking, closure and lessons-learned development occurred.

Management boards (i.e., Corrective Action Working Group, Corrective Action Review Board) were very effective tools for effecting rigorous program implementation and improvements.

#### Noteworthy Practices:

Review of the Issues Management systems at SMC and IFF indicated that they were effectively implemented.

SMC Self-Assessments and CARB are exceptionally well organized, comprehensive, and rigorously managed.

Facility Excellence Program for walkdowns is considered to be a noteworthy practice relative to providing continuous improvement for ISMS.

#### Opportunities for Improvement:

Integration between facility and corporate organizations for issues management and lessons learned program needs improvement.

### **3.0 CONCLUSIONS AND RECOMMENDATION**

The conclusion of this ISMS Verification Team is that the INEEL ISMS Description PDD-1004 has been implemented at SMC, IFF, and the operations objective at RWMC has been implemented. The Team also determined that DOE-ID has integrated their safety activities and oversight with those of the INEEL ISMS.

## **Recommendations**

The goal of the operating contractor has been to achieve control of the hazard identification and establishment of safety controls that would prevent further accidents or incidents. A major effort of the site was made to ensure the functional area requirements are adequately implemented with the facilities. It is recommended that in the short term any functional area system changes be limited to necessary, “high valve” changes and those changes need to be achieved in a non-disruptive manner.

## **4.0 LESSONS LEARNED**

This review evaluated two low hazard straightforward facilities. As a result an effort was made to conduct a review in minimum time with minimum personnel. Consequently, the review schedule was very demanding.

The good schedules provided by BBWI and DOE-ID greatly assisted the execution of the short review period. This review could not have been conducted within this short timeframe without that support.

The daily outbriefs were conducted in four separate areas. This was caused by distance and security requirements. This prevented the cross-pollination of ideas and the development of synergy between team members. A combined outbrief should be utilized if at all possible.

It may be helpful to provide additional examples of ISMSV results to first time team members to illustrate the ISMSV process during the pre-visit.

**APPENDIX A**  
Sub-Team Summaries

## **APPENDIX A**

### **Sub-Team Summaries**

#### **U. S. DEPARTMENT OF ENERGY (DOE)**

The DOE-ID IFF and SMC organizations have adequately implemented their ISMS to execute their responsibilities and provide oversight for the contractors' ISMS at IFF and SMC. The DOE-ID organization provides adequate oversight at IFF and SMC for the five ISMS Core Functions: (1) Define Scope of Work; (2) Analyze the Hazards; (3) Develop and Implement Controls; (4) Perform Work within Controls; and (5) Provide Feedback and Continuous Improvement.

#### **Issues**

- DOE1-1 The DOE-ID IFF level of staffing will not meet the sustained DOE-ID ISMS expectations for the IFF.
- EH1-1 DOE-ID and BBWI do not have directives, or procedures in place to address the process to be utilized for future EH issues that are identified or are directed to be included in the CATS program.
- EH1-2 DOE-EH needs to identify the type of issues and who is responsible for inputting new issues into the existing systems for continuing operations.

#### **Strengths**

- DOE1-2 The positive spirit of the DOE-ID organization to ISMS, their demonstrated teamwork with contractor personnel, and their strong sense of line management responsibility for safety for IFF and SMC are substantial strengths.

#### **SPECIFIC MANUFACTURING CAPABILITY (SMC)**

SMC has made notable progress in implementing the approved ISMS. The SMC organization has defined clear roles and responsibilities. Managers demonstrate a commitment to ISMS and are responsible and accountable for safety. Facility personnel demonstrate competence commensurate with responsibility and are fully engaged in the ISMS process by actively participating at all levels. Procedures and mechanisms are in place to ensure that hazards are analyzed; controls are developed; work is formally and appropriately authorized and safely performed; and feedback and improvement programs are in place and effective. SMC ISMS was determined to be implemented, and areas for improvement have been identified during this review which will lead to an even more robust ISMS.

SMC's implementation of ISMS facilitated worker involvement in work planning and hazard identification and mitigation. The employees demonstrated a high degree of enthusiasm and ownership for their role in the ISMS process.

### **Define the Scope of Work**

The scope of work at SMC rolls down from the customer through DOE-ID to SMC via the Performance Evaluation and Measurement Plan and the Performance Based Incentives. SMC has long, medium, and short term work planning and approval mechanisms. Maintenance work is developed, controlled, and executed according to the STD-101 process. MCP-3562 is used to accomplish those elements for operational activities. The mechanisms result in an approved Plan of the Day, allowing planned work to proceed.

### **Analyze the Hazards**

The Hazard Analysis process at the SMC adequately controls the hazards to workers, the environment, and the public. This process conforms to legal statutes and DOE national requirements and standards through a systematic flowdown of requirements into facility implementing procedures. Authorization Basis documents are effectively maintained through the use of company procedures and the Unreviewed Safety Question process.

A noted weakness is that the SMC SAR is not fully compliant with ID N 420.A. The SAR was initially approved prior to the release for the ID Notice and solely used the methodology of DOE-STD-1027. However, prior to this review, the contractor had provided to the local DOE field office a plan to upgrade the SAR to current local requirements.

Work packages are prepared in accordance with STD-101 and identify and mitigate hazards. An observed weakness was inconsistencies in hazard identification and mitigation documentation developed for similar work. An effective process to analyze and mitigate the hazards of operational activities has been institutionalized by the contractor's procedure MCP-3562. The use of photographs to familiarize workers with the hazards and operation of normally inaccessible equipment is a strength.

A potential problem was identified at SMC concerning interlocks, which are not included in a surveillance program, but are being relied upon to provide personal protection. A separate issue concerning equipment interlocks at the SMC involved bypassing factory installed equipment interlocks without first performing a formal evaluation of risks and benefits associated with bypassing an interlock device.

### **Develop and Implement Hazard Controls**

SMC adequately integrates work controls for maintenance work and operational activities under the INEEL ISMS. The implementation of hazard controls for maintenance work is managed by implementation of STD-101.

Work planners are well qualified in specifying mitigations for facility hazards. The SMC has recently conducted "Safety Authorization Basis Awareness" training to increase the level of

knowledge in the area for SMEs, including work planners. Operational activities use a similar process under MCP-3562. JSAs are conducted to develop controls for both maintenance work and operational activities. It was observed during interviews and observations that the hazard identification/mitigation process is both vertically and horizontally integrated across the work force. The facility uses an INEEL management tool called the Senior Supervisory Watch (SSW) to provide local management oversight at the job-site or operational location. Generally this is a roving watch, but occasionally this watch is assigned to follow specific higher risk activities. The SSW process could be strengthened by facility specific training in operations, production, and the facility authorization basis.

A weakness in the process was identification of inconsistencies in mitigative actions specified in Work Orders developed for performing similar work activities.

### **Perform Work Within Controls**

The SMC work force demonstrated through interviews, observations and document review that there is a strong commitment to perform work safely.

Work package approval and approval to commence work is well controlled, and involves representatives from the Operations, Maintenance, and Health & Safety organizations. The Site Area Director approves work packages, and the Nuclear Facility Manager approves the Plan of the Day, which authorizes the work to be scheduled for performance. A final approval is given by the on-duty Shift Supervisor who verifies that facility conditions are adequate to actually perform the work.

Facility shift operations start with a comprehensive and in-depth shift turnover. Both off-going and on-coming Shift Foremen actively participate. Shift operations personnel are assigned items to brief at this meeting and relevant non-operations personnel (maintenance, engineering, etc.) attend. The SSW, as previously discussed is an important part of management representation and oversight to ensure work is performed within controls.

### **Provide Feedback and Continuous Improvement**

Procedures and mechanisms that collect feedback information and work toward continuous improvement were strongly demonstrated by SMC. Feedback information is collected through self-assessments, independent assessments, trending, post-job reviews, lessons learned, employee safety concerns, and occurrence reports. Continuous improvement is gained by very effective management of issues, deficiencies, and concerns. The SMC issues management process uses a Root Cause Committee, a Trending Subcommittee, and Corrective Actions Review Board to identify root causes and corrective actions and ensure their completion addressed the issue.

### **Issues**

SHAZ1-1 There is an occasional lack of attention to detail in the completion of administrative duties.

- SHAZ1-2 The Safety Analysis Report/Technical Safety Requirements document is not fully compliant with the methodology of ID N 420.A.
- SHAZ1-3 The Senior Supervisory Watch program should include facility specific training in operations, production and the safety authorization basis. The SSW final certification authority should be the Site Area Director.
- SMG1-1 Facility Lessons Learned Coordinator Position is not proceduralized nor effectively integrated with Corporate Lessons Learned Coordinator.
- SMG1-2 No formal feedback mechanism exists for urgent Lessons Learned Coordinator notifications.
- SMG2-1 Position descriptions do not make a positive statement regarding being familiar with, and complying with, environmental requirements.
- SOP1-1 Interlocks associated with restricting/preventing personnel access to rotating equipment and other hazards during production operations are not routinely checked to ensure adequate personnel protection.
- SOP1-2 Interlocks designed to prevent operation of production equipment when the factory installed working surface is not placed in the normal position have been bypassed without performing a formally documented review.
- SOP1-3 Inconsistencies in hazard identification and mitigation exist between similar JSAs and Work Order documents.

### **Strengths**

- SHAZ1-4 The Hazard Evaluation Group is an effective integrating mechanism for performing MCP-3562 reviews.
- SMG1-3 SMC Self-assessments and CARB programs are exceptionally well organized, comprehensive, and rigorously managed.
- SMG1-4 Personnel at all levels of the organization involved in work planning and prioritization, procedure development and feedback, and corrective actions activities are engaged in the processes, concerned with respect to achieving safety and production, and striving for improvement.
- SMG1-5 Issues Management System at SMC is effectively implemented.
- SOP1-4 A Work Order involving a “high risk” task included detailed instructions and photographs of normally inaccessible equipment to familiarize workers with the hazards and operation of that equipment. The Work Order also contained several

“lessons learned” bulletins pertaining to heat stress and radiation exposure problems experienced while performing similar work at other DOE sites and activities.

SOP1-5 Employee involvement in the MCP-3562 process has created ownership in the operations procedure development and validation process, and has resulted in the identification and mitigation of hazards associated with operations processes.

## **IDAHO FALLS FACILITIES (OTHER THAN IRC)**

The IFF has made notable progress in implementing the approved ISMS. The IFF organization has clearly defined roles and responsibilities. Managers demonstrate a commitment to ISMS and are responsible and accountable for safety. Facility personnel demonstrate competence commensurate with responsibility, and are fully engaged in the ISMS process by actively participating at all levels. Procedures and mechanisms are in place to ensure that hazards are analyzed; controls are developed; work is formally and appropriately authorized and safely performed; and feedback and improvement programs are in place and effective. IFF ISMS was determined to be implemented and areas for improvement were identified during this review that will lead to a robust ISMS.

### **Define the Scope of Work**

The INEEL Institutional Plan establishes the overall strategic thrusts and vision for activities performed at the INEEL. Procedures and mechanisms are in place that require line management to identify and prioritize mission related tasks and processes, modifications, and work. From a business perspective, most of these mechanisms are defined in Company-wide Manual 5, Project Cost and Schedule Controls. From the perspective of the IFF SAD, activities are primarily focused on providing infrastructure support for office workers and R&D laboratory work. Proposed modifications or changes that affect facilities are evaluated through the IFF Operations Safety Board. Work Packages define the general tasks for the year that are then accomplished within established work control processes for maintenance and operations. These processes were determined to be adequate for defining the scope of work for the Idaho Falls Facilities.

### **Analyze the Hazards**

Hazards associated with operations activities are determined using the requirements of MCP-3562. Hazards associated with research and development are identified and analyzed using MCP-3571, while maintenance and construction hazards are analyzed by the use of STD-101. These processes adequately address the hazards associated with performing work in the Idaho Falls Facilities. Hazard classifications have been performed for all the Idaho Falls Facilities and determined that the facilities do not meet the criteria for Hazard Categories 1 or 2. Therefore, all the Idaho Falls Facilities fall into the classification known as “Not Requiring Additional Safety Analysis.” The documents that define the hazard classification for IFF are being updated to meet current requirements as they reach the end of their five-year review cycle.



For leased facilities, a formal process does not exist for ensuring that BBWI and DOE-ID employees affected by work being performed by the building owner fully understand the hazards associated with that work.

### **Develop and Implement Controls**

STD-101 and MCP-3562 both contain requirements for the use of specific tools for ensuring that hazards associated with maintenance and operations are determined, evaluated and mitigated in the documents used to control work. The tools included in the hazard identification and mitigation process include the Hazard Profile Screening Checklist, Facility Hazards Lists, planning walkdowns, workability walkdowns, pre-job briefings and the establishment of an adequate “stop work” process.

The IHR process for research activities also provides for the use of tools to ensure that safety requirements are integrated into work performance. These tools, as specified in MCP-3571, include the IHR Checklist and Hazard Mitigation Plan, Hazard Assessment and Mitigation Plan, Hazard Mitigation Checklist, Work Activities Checklist for compliance with NEPA, Exposure Survey and Assessment forms, and a Conduct of Operations Checklist.

The process for developing and implementing controls is adequate.

### **Perform Work Within Controls**

Once a maintenance work order has completed the review process, a workability walkdown is conducted, the work order is approved and then scheduled for work on the Plan of the Day. The Site Area Director approves maintenance work performed in IFF. The job supervisor conducts a pre-job briefing prior to the performance of the work. All individuals interviewed fully understood their “Stop Work” authority and indicated that they would not hesitate to use it. Document reviews, interviews with appropriate personnel and direct observation of work indicated that these processes are implemented.

All research work is controlled through the Independent Hazard Review Group (IHRG) process specified in MCP-3571. Following completion of this process, the letter authorizing the process is approved by the laboratory manager and the R&D facility manager thereby authorizing the work to be conducted within the bounds established. All personnel involved in the work are required to read and abide by all conditions and requirements of the IHR documents and approval letter. MCP-3571 contains specific mechanisms that require re-evaluation of the project if the scope of the R&D project needs to be changed such that it is different than that specified in the IHR or should new hazards be introduced.

The performance of operations activities is controlled through an established Conduct of Operations program and is considered to be adequate.

Interviews with leased lab senior management found that there is a good understanding of what constitutes the facility authorization basis. Both PDD-1015 and MCP-3571 formally define the Authorization Basis. The IHRG is tasked by PDD-1015, Research and Development Operations,

to ensure any new or proposed activities are within the authorization basis. Interviews with IHRG members found that they recognize and accept this responsibility.

### **Provide Feedback and Continuous Improvement**

Procedures and mechanisms are in place and utilized by personnel to collect feedback information, including self-assessments, facility excellence walkdowns, monitoring of performance measures, occurrence reporting, and investigation of injuries and accidents. Self-assessment and management assessment programs have been established in the assessed organizations in accordance with MCP-8 and MCP-3449. The semiannual Integrated Assessment Program Review for the Idaho Falls Maintenance and Operations Directorate was recently completed. The review was insightful and offered several useful suggestions for improving worker assessment skills, tracking of self-assessment performance measures, and documentation of assessments. The current process used by R&D laboratories for annual inspections of areas per MCP-3449 is not well defined, and a shared understanding of roles, responsibilities, and expectations has not been developed between management and S&H professionals.

During previous reviews the processes for identification of environmental hazards were conducted separately due to the development of improved environmental hazard identification processes. Those processes have now been improved and included in the key processes (e.g., STD-101, MCP-3562, and MCP 3471).

The various modules of the ICARE process provide formal mechanisms for managers to consider and resolve recommendations for improvement. Additionally, the Voluntary Protection Program (VPP) and Employee Safety Teams provide very effective mechanism and avenues for considering and resolving improvement recommendations and worker suggestions. The teaming of management and workers in mutually beneficial actions to improve processes and work conditions appears to be an increasingly important aspect of the feedback and improvement cycle within the IF Facilities and leased laboratories.

A number of additional processes are used to establish, document and implement safety performance objectives and measures. The performance measures and trending report provides information on company and individual area performance. Post-job reviews are conducted at the completion of maintenance activities to provide feedback for continuous improvement of the maintenance process.

IFF personnel fully understood their “Stop Work” authority and indicated that they would not hesitate to use it. A lessons learned process has been instituted by lab management in the form of a monthly transmittal of relevant complex-wide events.

### **Issues**

IHAZ1-1 Job Safety Analysis used to identify, analyze and control hazards for maintenance and operational activities may be too broad in scope to adequately protect the worker.

- IMG1-1 The current process used by R&D laboratories for annual inspections of areas per MCP-3449 is not well defined, and a shared understanding of roles, responsibilities, and expectations has not been developed between management and S&H professionals.
- IMG1-2 Corporate and facility issues management personnel are not effectively integrated .
- IOP1-1 There is no formal process for ensuring that hazards associated with building owner work in Idaho Falls Facilities are understood by affected BBWI and DOE-ID employees.

### **Strengths**

- IHAZ1-2 Worker involvement in safety improvement efforts such as VPP and employee safety teams is inquisitive, enthusiastic and has a positive influence on safety.
- IMG1-3 The joint performance of a self-assessment by a manager and worker offered a valuable opportunity for sharing information and learning about company processes for handling issues, concerns and suggestions for improvement.
- IMG1-4 The development of an informal 5 year schedule of self-assessments allows the R&D Self-assessment Coordinator to anticipate and remember long-term commitments and required program review.
- IMG1-5 The teaming of management and workers in mutually beneficial actions to improve processes and work conditions appears to be an increasingly important aspect of the feedback and improvement cycle within the IF Facilities and leased laboratories.
- IMG1-6 The site processes reviewed indicated that substantial progress has been made in improving weaknesses. Of particular note was the integration of environmental hazards into STD-101, MCP-3562, and MCP-3571.
- IOP1-2 Worker participation added value in the work planning process and they demonstrated an enthusiastic attitude toward their participation.

### **RADIOACTIVE WASTE MANAGEMENT COMPLEX (OPERATIONS OBJECTIVE) (RWMC)**

RWMC has made significant progress in effectively implementing ISMS. Of particular note was the exemplary material condition and housekeeping of the RWMC complex. The Operations Objective was reviewed during this ISMS Phase II review as a result of failing to meet the objective during the ISMS Phase II, Part I review in September 1999. Managers at RWMC demonstrate a commitment to ISMS and are responsible and accountable for safety. Facility personnel are competent commensurate with their responsibility. One minor issue was revealed in that training for mechanics does not include valve positioning/valve operation. Procedures

and mechanisms are in place to ensure that hazards are analyzed; controls are developed; work is formally and appropriately authorized and performed safely; and feedback and improvement programs are in place and effective. Personnel demonstrate a noteworthy sense of pride, teamwork, and accomplishment.

### **Define the Scope of Work**

The scope of work in individual work orders and operational procedures at RWMC is satisfactorily described for the intended extent of work to be performed.

### **Analyze the Hazards**

RWMC has comprehensive procedures and mechanisms in place to ensure environmental, safety, and health hazards associated with work throughout the facility are identified and analyzed. Mechanisms to identify and analyze environmental hazards are utilized to fulfill the intent of ISMS to fully integrate environment into safety basis documentation, work planning and work execution.

The RWMC Operations Safety Board demonstrated effectiveness in ensuring that proposed activities were consistent with the facility's authorization basis.

The hazards identification processes for operations and maintenance activities defined under STD-101 and MCP-3562 were in place and functional at RWMC.

### **Develop and Implement Hazard Controls**

After the associated hazards have been identified and before work is performed, hazard analyses are used at RWMC to develop appropriate controls and identify an applicable set of safety standards and requirements.

RWMC facility-level implementation activities for STD-101 and MCP-3562 address all aspects of hazard control inherent to these procedures.

Other mechanisms used to develop and implement hazard controls at RWMC include the facility USQ process, Operational Safety Board review, SME reviews, and post-job reviews. Environmental permit conditions/requirements are utilized as controls that mitigate potential hazards to the environment. The ALARA Program established provides the framework for incorporating controls into work that may involve exposure to radiation and radioactive material.

### **Perform Work Within Controls**

RWMC demonstrated highly effective process controls for confirmation of facility readiness and for authorization of work. The Plan of the Day (POD) could be made more formal with implementation of a change control process for POD changes. Hazard controls were reliably communicated to operators and craft personnel.

With a few exceptions, operators and crafts performed work in accordance with written instructions and observed the written hazard control requirements faithfully.

### **Provide Feedback and Continuous Improvement**

Procedures and mechanisms are in place at RWMC to collect feedback information, such as self-assessments, independent assessments, post-job reviews, performance measures and indicators, and lessons learned.

The SSW log revealed that the majority of SSW observations are limited to the status of the observed work, rather than results of mentoring of the crews in topical areas such as Conduct of Operations, Conduct of Maintenance, ISMS, etc.

The Facility Excellence Walkdown Program is an effective integrating mechanism.

Procedures and mechanisms are in place and utilized which ensure adequate performance measures and indicators, including safety performance measures.

### **Issues**

- ROP1-1      No formal (proceduralized) change control process exists for POD changes.
- ROP1-2      Training for mechanics is deficient, as it does not include valve positioning/valve operation.
- ROP1-3      Management has not clearly defined the expectations for SSW duties.

### **Strengths**

- ROP1-4      The Facility Excellence Walkdown Program is an effective integrating mechanism.
- ROP1-5      Material condition and housekeeping of the RWMC complex was exemplary.